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SOURCE Radio, No 2, 1949.HIGH-FREQUENCY AUTO TRANSPORTATION

G. I. Babat
Laureate of Stalin Prize
Doctor of Technical Sciences

Three possible methods employing "wireless" transmission of electric power to land transport devices are considered: electromagnetic, electrical induction, and magnetic induction. The latter was finally decided upon as the only practical method of solving the problem. In contactless transportation (no physical contact between the supply source and the vehicle), it is necessary that there be a strong electromagnetic coupling between the supply system and the receiving coil. The coefficient of this coupling must be quite large, and the coupling must be greater than the critical value. Calculations made for different frequencies established that in the range from 20 to 50 kilocycles, transmission efficiencies up to 90 percent may be obtained, if the receiving circuit is not farther than 2 - 3 meters away from the conductors of the supply system.

There is the possibility of supplying the vehicle with a small battery in order that the vehicle may move about in the city using the power it had stored while on the high-frequency thoroughfare, as well as a flywheel to be used for the same purpose.

Experiments and calculations have shown that the expenditure of electric power for high-frequency transportation per ton-kilometer of transported load would be the same, or possibly less, than it is for present-day trolley buses, namely, about 100-watt-hours per ton-kilometer. The operating costs for high-frequency auto transport would be considerably less than they are for gasoline transportation.

There are automatic methods for cutting out the voltage on sections of the highway when no vehicle is passing over, and methods for regulating the speed of the vehicle. Construction of experimental units was begun in Moscow in 1943.

A model of the "vechemobil" (high frequency current automobile) and a full-size operational vehicle have been made.

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